IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of Brig Barnum Elliott)	
)	Group Art Unit: 2617
Application No.:10/779,948)	
)	Examiner: Taylor, Barry W.
Filed: February 17, 2004)	
)	
For: TIME DIVISION MULTIPLE ACCESS)	
FOR NETWORK NODES WITH MULTIPLE)	
RECEIVERS)	

<u>AMENDMENT UNDER 37 C.F.R. § 1.111</u>

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office Action with notification date August 2, 2007, please

amend the application as follows:

Amendments to Claims: begin on page 2 hereof.

Remarks: begin on page 10 hereof.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method of communicating among nodes in a wireless network, comprising:

assigning a timeslot to each of a plurality of nodes in the wireless network, the timeslot being a time for a corresponding one of the plurality of nodes to receive messages transmitted by other <u>nodes</u> of the plurality of nodes;

assigning a modulation scheme to each of the plurality of nodes;

transmitting a message from at least one of the other of the plurality of nodes, using the assigned modulation scheme, to at least one destination node within the plurality of nodes, the message being transmitted during a timeslot assigned to the at least one destination node; and

receiving, at the at least one destination node, a message from the at least one of the other of the plurality of nodes.

2. (Original) The method of claim 1, wherein the assigning comprises assigning one of a plurality of transmit spreading codes to each of the plurality of nodes.

3. (Original) The method of claim 1, wherein the assigning comprises assigning one of a plurality of hop sets to each of the plurality of nodes.

4. (Original) The method of claim 1, wherein:

the assigning comprises assigning a unique transmit spreading code to each of the plurality of nodes.

5. (Original) The method of claim 1, wherein:

the transmitting a message comprises transmitting messages from a plurality of transmitting nodes, and

the receiving a message comprises receiving, at one of the at least one destination node, the respective messages from the plurality of transmitting nodes.

6. (Original) The method of claim 1, wherein the receiving a message comprises receiving, at a plurality of the at least one destination node, messages from a plurality of transmitting nodes.

7. (Original) The method of claim 1, wherein the assigning comprises assigning one of a plurality of orthogonal or nearly orthogonal transmit spreading codes to each of the plurality of nodes.

8. (Original) The method of claim 7, wherein the assigning further comprises

assigning one of K orthogonal or nearly orthogonal transmit spreading codes to each

node, where K is a number less than a number of nodes in the wireless network.

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9. (Original) The method of claim 7, further comprising:

waiting, after the transmitting, for an acknowledgement indicating correct receipt;

and

when the acknowledgement is not received after a predetermined period of time:

selecting a new transmit spreading code; and

retransmitting the message.

10. (Original) The method of claim 1, wherein:

the assigning comprises assigning a plurality of one of orthogonal or nearly

orthogonal transmit spreading codes, carrier frequencies, and hop sets to each node of

the plurality of nodes, each of the nodes having a plurality of transmitters and a

plurality of receivers,

the transmitting comprises transmitting a plurality of messages from one of the

nodes to the at least one other of the nodes, and

the receiving comprises receiving, from the one of the nodes, the plurality of

messages.

11. (currently amended) A network comprising:

a plurality of nodes, each of the <u>plurality of</u> nodes having an assigned modulation scheme, each <u>node</u> of the <u>plurality of</u> nodes comprising:

at least one transmitter configured to transmit to a destination node using the assigned modulation scheme during a timeslot assigned to the destination node; and

a plurality of receivers configured to receive a plurality of messages <u>from</u> <u>other nodes in the plurality of nodes</u> during a timeslot assigned to the <u>each</u> node.

12. (original) The network of claim 11, wherein each of the nodes further comprises:

a plurality of transmitters, each of the transmitters being configured to transmit using one of a plurality of transmit spreading codes, a plurality of carrier frequencies, and a plurality of hop sets.

13. (original) The network of claim 11, wherein each one of the receivers is configured to demodulate each of the received messages using one of a transmit spreading code of the plurality of transmit spreading codes, a carrier frequency of the plurality of carrier frequencies, and a hop set of the plurality of hop sets.

14. (currently amended) A network comprising:

means for transmitting in [[a]]the network that includes a plurality of nodes

messages from more than one of the nodes using a plurality of modulation schemes;

and

means for receiving in one of the nodes a plurality of the messages from the more

than one of the nodes only during a receiving timeslot assigned to said one of the

nodes timeslots.

15. (currently amended) A machine-readable medium having recorded thereon

instructions for at least one processor of a node in a network, such that when the at

least one processor reads and executes the instructions, the node is configured to:

receive[[, a]] messages from at least one of the other nodes in the network during

a receive timeslot assigned to the node.

16. (original) A method comprising:

receiving, by a node in a network during a TDMA timeslot assigned to the node

for receiving, a plurality of messages transmitted by a plurality of other nodes, each

of the other nodes transmitting messages to the node during the timeslot assigned to

the node, each of the messages being transmitted using a different orthogonal or

nearly orthogonal transmit spreading code.

17. (original) A method for simultaneously receiving a plurality of messages in a wireless network node, the method comprising:

receiving, by a node in a network during a TDMA timeslot assigned to the node for receiving, a plurality of messages transmitted by a plurality of other nodes, each of the other nodes transmitting message during the timeslot assigned to the node, each of the messages being transmitted using a different carrier frequency.

18. (currently amended) A method for communicating among a plurality of ultra-wideband radios functioning as wireless network nodes, the method comprising:

using one of a plurality of transmit spreading codes to transmit [[a]] messages from [[a]] certain ultra-wideband radios of the plurality of ultra-wideband radios to at least one other of the ultra-wideband radios in a wireless network during a timeslot assigned to the at least one other of the ultra-wideband nodes radios for receiving the messages;

receiving and demodulating the messages, using the one of the plurality of the transmit spreading codes at the at least one other of the ultra-wideband radios during the timeslot.

19. (currently amended) A node comprising:

at least one transmitter configured to transmit to a destination node using an assigned modulation scheme during a timeslot assigned to the destination node; and

a plurality of receivers configured to receive a plurality of messages from a

plurality of nodes during a timeslot assigned to the node.

20. (original) The method of claim 1, wherein the timeslot is the same for the

each of the plurality of nodes.

21. (original) The method of claim 1, wherein the timeslot is different for the

each of the plurality of nodes.

22. (original) The method of claim 1 wherein the timeslot is the same for certain

of the plurality of nodes and is different for each of the plurality of nodes other than

the certain nodes.

23. (currently amended) In an ad hoc, wireless network having a plurality of

nodes, a method of communicating amongst said nodes comprising:

assigning a timeslot to each of said plurality of nodes, said timeslot being the time

when said each of said plurality of nodes is capable of receiving [[a]] messages from

at least one all other of said plurality of nodes;

assigning a modulation scheme to said each of said plurality of nodes;

transmitting said messages from [[said]] at least one of said all other of said

plurality of nodes in accordance with said modulation scheme to at least one of said

each of said plurality of nodes during said timeslot assigned to said at least one of

said each of said plurality of nodes; and

receiving said messages at said at least one of said each of said plurality of nodes.

REMARKS

This Reply is responsive to the non-final Office Action[1] of August 2, 2007.

Claims 1-23 were presented for examination and were rejected. Claims 1, 11, 14, 15, 18,

19 and 23 are amended. No new matter is added. Support for the amendments can be

found in the application, as originally filed. See, for example, at least paragraph [0056].

Claims 1, 11, 14-19 and 23 are independent claims. Claims 1-23 are pending.

Claims 14-15 are rejected under 35 U.S.C. § 103(a) as being un-patentable over

Sydon et al., (2002/0085520, referred to hereinafter as "Sydon") in view of newly-cited

Hiben et al. (2002/0169008, referred to hereinafter as "Hiben"). Claim 19 is rejected

under 35 U.S.C. § 103(a) as being un-patentable over Sivakumar et al., (2005/0018631,

referred to hereinafter as "Sivakumar") in view of Hiben. Claims 1-13, 16-17, 21 and 23

are rejected under 35 U.S.C. § 103(a) as being un-patentable over Sivakumar in view of

Sydon further in view of Hiben. Claim 18 is rejected under 35 U.S.C. § 103(a) as being

un-patentable over Sivakumar in view of Abdesselem et al. (2001/0022791, referred to

hereinafter as "Abdesselem") further in view of Hiben. Claims 20 and 22 are rejected

under 35 U.S.C. § 103(a) as being un-patentable over Sivakumar in view of Sydon and

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[1] The Office Action may contain a number of statements characterizing the cited references and/or the claims which Applicant may not expressly identify herein. Regardless of whether or not any such statement is identified herein, Applicant does not automatically subscribe to, or acquiesce in, any such statement. Further, silence with regard to rejection of a dependent claim, when such claim depends, directly or indirectly, from an independent claim which Applicant deems allowable for reasons provided herein, is not acquiescence to such rejection of that dependent claim, but is recognition by Applicant that such previously lodged rejection is moot based on remarks and/or amendments presented herein relative to that independent claim.

Hiben, further in view of Dohler et al. (2004/0131025, referred to hereinafter as

"Dohler"). Applicant respectfully traverses these rejections for the following reasons.

Applicant's claims provide assigned timeslots for each of a plurality of network

nodes where those timeslots define when the nodes can RECEIVE messages. However,

the disclosures of Sydon and Sivakumar, as discussed in the Applicant's last response,

are deficient because they are limited to timeslots defining when the nodes can SEND

messages. That deficiency, relative to Applicant's claims, was essentially admitted in the

instant Office Action.

Indeed, the 35 U.S.C. § 102(b) rejection based on Sydon alone and the 35 U.S.C.

§ 102(e) rejection based on Sivakumar alone have been withdrawn in the instant Office

Action. Newly-applied Hiben is cited for the purpose of allegedly teaching the receiving

timeslots which are missing from Sydon and Sivakumar. According to the Office Action,

the alleged receiving time slots in Hiben are assigned to nodes to permit those nodes to

"RECEIVE messages" during those time slots. (*see*, e.g., Office Action, page 2, bottom,

emphasis in original) However, Hiben, in combination with Sydon and/or Sivakumar do

not provide a basis for rejecting Applicant's claims for the following reasons.

HIBEN'S RECEIVER DOES NOT RECEIVE MESSAGES FROM MORE THAN ONE SOURCE DURING ITS ALLEGED "RECEIVING TIMESLOT"

Applicant's independent claims all relate to subject matter which is capable of

receiving *multiple messages from multiple nodes* during a particular *receiving* timeslot.

This is so because novelty of Applicant's claimed subject matter includes the establishing

of receiving timeslots, not transmitting timeslots. Hiben does not have this capability

because, in Applicant's view, Hiben's timeslots are transmitting timeslots, not receiving

timeslots. Even if Hiben can be reasonably interpreted to disclose a receiving timeslot,

Hiben discloses only one source of communication with a receiver during a timeslot.

That is, either Hiben's base station 104 wirelessly sends to a particular portable

communication unit 106 (receiver) during a timeslot, or a particular portable

communication unit 106 wirelessly sends to base station 104 (receiver) during a timeslot.

At best, Hiben teaches that nodes in its embodiments can receive messages from only one

source during a timeslot, whether that timeslot is interpreted as a sending or receiving

timeslot.

In support of the foregoing argument Applicant considers portions of Hiben's

paragraphs [0020] and [0021]. Hiben uses either frequency division duplexing (FDD) or

time division duplexing (TDD) as stated in those paragraphs. First, referring to Hiben's

paragraph [0020] in which FDD is discussed:

> On the downlink, the base station 104 transmits continuously in each of the
> TDMA time slots with the time slots destined for the different communication
> units 106. On the uplink, the communication units 106 take turns transmitting in
> the different TDMA time slots. (Hiben, [0020])

This section discloses that with respect to any particular communication unit 106

included within the plurality of units 106 (*see* Hiben, Fig. 1), it receives its message (i.e.,

on the downlink) from only base station 104. This section, in combination with Hiben's

Fig. 1, further discloses that base station 104 receives a message (i.e., on the uplink) from

a communication unit 106 only during that unit's transmitting TDMA timeslot. Indeed, it

says that communication units 106 "**take turns transmitting** in the different TDMA time

slots" (emphasis added) which means that each communication unit 106 transmits *in*

turn. All transmission from any unit 106 is with base station 104. Therefore, only one

transmission is received by base station 104 from only one particular communication unit 106 out of a group of communication units 106 during any particular timeslot. Thus, under FDD, regardless of interpretation of these timeslots as transmitting or receiving timeslots, (and this Hiben section implies that they are transmitting timeslots) only one source is supplying a message received by a Hiben node (either communication unit node 106 when it is receiving, or base station node 104 when it is receiving) during that particular timeslot.

Next, referring to Hiben, paragraph [0021] where TDD is discussed:

> As with FDD, during the block of time used for uplink communication, the multiple communication units 106 will take turns transmitting in the different TDMA time slots. In the block of time reserved for downlink communications, the base station 104 transmits continuously with the different TDMA time slots destined for different communication units 106. (Hiben, [0021])

This section again states that the multiple communication units 106 **"take turns transmitting"** in the different TDMA time slots, wherefore base station 104 receives one transmission from only one of the communication units 106 in any particular timeslot, as explained above. And, in the downlink, each communication unit 106 receives messages from only one source, namely, from base station 104. Thus, under TDD, again regardless of interpretation of these timeslots as transmitting or receiving timeslots, where Applicant maintains that they are transmitting timeslots, only one source is supplying a message received by a Hiben node (either communication unit node 106 when it is receiving, or base station node 104 when it is receiving) during that particular timeslot.

With the foregoing in mind consider Applicant's independent claims:

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Claim 1 recites, *interalia*: "assigning a timeslot to each of a plurality of nodes in the wireless network, the timeslot being a time for a corresponding one of the plurality of nodes to receive messages transmitted by <u>other nodes</u> of the plurality of nodes." (emphasis added) Hiben does not disclose or suggest a receiving timeslot assigned to a node to receive messages from "other nodes." Instead, Hiben's receiving node receives transmission from <u>only one</u> node in any particular timeslot. Claim 1, rejected under 35 U.S.C. § 103(a) as being un-patentable over Sivakumar in view of Sydon further in view of Hiben is allowable because these references taken individually, or in any reasonable combination, do not disclose or suggest at least this claim element of claim 1, for reasons given above.

Claim 11 recites, each node comprising, *interalia*: "a plurality of receivers configured to receive a plurality of messages <u>from other nodes</u> in the plurality of nodes during a timeslot assigned to the each node". (emphasis added) Hiben does not disclose or suggest a receiving timeslot assigned to a node to receive messages from "other nodes." Instead, Hiben's receiving node receives transmission from <u>only one</u> node in any particular timeslot. Claim 11, rejected under 35 U.S.C. § 103(a) as being un-patentable over Sivakumar in view of Sydon further in view of Hiben is allowable because these references taken individually, or in any reasonable combination, do not disclose or suggest at least this claim element of claim 11, for reasons given above.

Claim 14 recites, *interalia*: "means for receiving in one of the nodes a plurality of the <u>messages from the more than one of the nodes</u> only during a receiving timeslot assigned to said one of the nodes." (emphasis added) Hiben does not disclose or suggest a receiving timeslot assigned to a node to receive a plurality of messages from more than

one of the nodes - Hiben's receiving node receives transmission from only one node in any particular timeslot. Claim 14, rejected under 35 U.S.C. § 103(a) as being un-patentable over Sydon in view of Hiben is allowable because these references taken individually, or in any reasonable combination, do not disclose or suggest at least this claim element of claim 14, for reasons given above.

Claim 15 recites, *interalia*, a node: "which is configured to: "receive messages from other nodes in the network during a receive timeslot assigned to the node." (emphasis added) Hiben does not disclose or suggest a receive timeslot assigned to a node which is configured to receive messages from other nodes - Hiben's receiving node receives transmission from only one node in any particular timeslot. Claim 15, rejected under 35 U.S.C. § 103(a) as being un-patentable over Sydon in view of Hiben is allowable because these references taken individually, or in any reasonable combination, do not disclose or suggest at least this claim element of claim 15, for reasons given above.

Claim 16 recites, *interalia*: "receiving, by a node in a network during a TDMA timeslot assigned to the node for receiving, a plurality of messages transmitted by a plurality of other nodes, each of the other nodes transmitting messages to the node during the timeslot assigned to the node, each of the messages being transmitted using a different orthogonal or nearly orthogonal transmit spreading code." (emphasis added) Hiben does not disclose or suggest a node receiving a plurality of messages during a receiving timeslot assigned to the node. Instead, Hiben's receiving node receives transmission from only one node in any particular timeslot. Claim 16, rejected under 35 U.S.C. § 103(a) as being un-patentable over Sivakumar in view of Sydon further in view

of Hiben is allowable because these references taken individually, or in any reasonable combination, do not disclose or suggest at least this claim element of claim 16, for reasons given above.

Claim 17 recites, *interalia*: "receiving, by a node in a network during a TDMA timeslot assigned to the node for receiving, a plurality of messages transmitted by a plurality of other nodes, each of the other nodes transmitting message during the timeslot assigned to the node, each of the messages being transmitted using a different carrier frequency." (emphasis added) Hiben does not disclose or suggest a node receiving a plurality of messages during a receiving timeslot assigned to the node. Instead, Hiben's receiving node receives transmission from only one node in any particular timeslot. Claim 17, rejected under 35 U.S.C. § 103(a) as being un-patentable over Sivakumar in view of Sydon further in view of Hiben is allowable because these references taken individually, or in any reasonable combination, do not disclose or suggest at least this claim element of claim 17, for reasons given above.

Claim 18 recites, *interalia*: "using one of a plurality of transmit spreading codes to transmit messages from certain ultra-wideband radios of the plurality of ultra-wideband radios to at least one other of the ultra-wideband radios in a wireless network during a timeslot assigned to the at least one other of the ultra-wideband radios for receiving the messages." (emphasis added) Hiben does not disclose or suggest nodes (radios) transmitting messages to another node for receiving those messages during a timeslot assigned to that other node. Rather, Hiben's receiving node receives messages from only one node in any particular timeslot. Claim 18, rejected under 35 U.S.C. § 103(a) as being un-patentable over Sivakumar in view of Abdesselem further in view of

Hiben is allowable because these references taken individually, or in any reasonable combination, do not disclose or suggest at least this claim element of claim 18, for reasons given above.

Claim 19 recites a node comprising, *interalia*: "a plurality of receivers configured to receive a plurality of messages from a plurality of nodes during a timeslot assigned to the node." (emphasis added) Hiben does not disclose or suggest a node having a plurality of receivers to receive messages from a plurality of nodes during a timeslot assigned to the node. Instead, Hiben's receiving node receives transmission from only one node during any particular timeslot. Claim 19, rejected under 35 U.S.C. § 103(a) as being un-patentable over Sivakumar in view of Hiben is allowable because these references taken individually, or in any reasonable combination, do not disclose or suggest at least this claim element of claim 19, for reasons given above.

Claim 23 recites, *interalia*, "assigning a timeslot to each of said plurality of nodes, said timeslot being the time when said each of said plurality of nodes is capable of receiving messages from all other of said plurality of nodes." (emphasis added) Hiben does not disclose or suggest each node of a plurality of nodes being capable of receiving messages from all other nodes. To the contrary, Hiben's receiving node receives transmission from only one node during a timeslot. Claim 23, rejected under 35 U.S.C. § 103(a) as being un-patentable over Sivakumar in view of Sydon further in view of Hiben is allowable because these references taken individually, or in any reasonable combination, do not disclose or suggest at least this claim element of claim 23, for reasons given above.

Dependent claims 2-10 and 20-22, dependent from claim 1, are also allowable, at least for reasons based on their respective dependencies from allowable base claim 1.

Dependent claims 12 and 13, dependent from claim 11, are also allowable, at least for reasons based on their respective dependencies from allowable base claim 11.

In accordance with MPEP 2143, to establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicants' disclosure. And, all three of these basic criteria must be met - if any one is not met the prima facie case of obviousness is not made.

It is clear that a prima facie case of obviousness has not been established at least because the prior art references when combined do not teach or suggest all claim limitations of all of the pending claims for reasons given above. Applicant reserves its rights to present rebuttal arguments based on the other criteria in future responses, if need be.

CONCLUSION

Reconsideration and allowance are respectfully requested based on the above amendments and remarks. It is respectfully submitted that all claims and, therefore, this application are in condition for allowance.

If there are any remaining issues or if the Examiner believes that a telephone conversation with Applicant's attorney would be helpful in expediting the prosecution of this application, the Examiner is invited to call the undersigned at the number provided below.

To the extent necessary, a petition for extension of time under 37 C.F.R. § 1.136 is hereby made, the fee for which should be charged to deposit account number 07-2347. Please charge any other fees due, or credit any overpayment made to that account.

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